## **CLAIMS**

## What is claimed is:

1	1.	A me	thod comprising:	
2		placin	ng an executable thread of instructions in an inactive state in response to	
3	detecti	on of a	at least one of a set of predetermined conditions;	
4		sendi	ng a message from a semaphore to control circuitry to execute the thread of	
5	instructions to change a state of the thread of instructions from the inactive state.			
1		2.	The method of claim 1 wherein changing the state of the thread of	
2	instruc	tions fi	rom the inactive state comprises changing the state of the thread of	
3	instructions to an active state.			
1		3.	The method of claim 2 further comprising executing the thread of	
2	instruct	tions w	hen in the active state.	
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1		4.	The method of claim 1 wherein the set of predetermined conditions	
2	comprises an unresolved dependency.			

1	5. The method of claim 1 wherein the set of predetermined conditions		
2	comprises a response from the semaphore indicating that a resource corresponding to the		
3	semaphore is unavailable.		
1	6. The method of claim 1 further comprising maintaining an indication of a		
2	state of each of a plurality of executable threads of instructions.		
1	7. The method of claim 6 wherein the indication of the state of each thread		
2	comprises a state variable corresponding to a dependency, if any, of an associated thread.		
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1	8. An apparatus comprising:		
2	execution means for placing an executable thread of instructions in an inactive		
3	state in response to detection of at least one of a set of predetermined conditions;		
4	communication means communicatively coupled with the execution means for		
5	sending a message from a semaphore to control circuitry to execute the thread of		
6	instructions to change a state of the thread of instructions from the inactive state.		
1	9. The apparatus of claim 8 further comprising means for maintaining an		
2	indication of a state of each of a plurality of executable threads of instructions.		
1	10. The apparatus of claim 9 wherein the indication of the state of each thread		
2	comprises a state variable corresponding to a dependency, if any, of an associated thread.		
_	to a dependency, it any, or an associated lineau.		

-11. An app	paratus comprising:
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- an execution circuit to receive and execute a thread of instructions, wherein the

  execution circuit transmits a semaphore request message and places the thread in an
- 4 inactive state in response to the thread of instructions requiring a resource having an
- 5 associated semaphore; and

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- a semaphore entity coupled with the execution circuit to receive the semaphore
- 7 request message from the execution circuit and to selectively grant control of the
- 8 semaphore in response to the semaphore request message by transmitting a semaphore
- 9 acknowledge message to the execution circuitry, wherein the execution circuitry, in
- response to receiving the semaphore acknowledge message, removes the thread of
- instructions from the inactive state.
- 1 12. The apparatus of claim 11 further comprising:
- 2 at least one additional execution circuit to execute threads of instructions; and
- a thread dispatcher coupled with the execution circuit and at least one additional
- 4 execution circuit to dispatch threads for execution by selected execution circuits.
- 1 13. The apparatus of claim 11, wherein the execution circuitry, in response to
- 2 receiving the semaphore acknowledge message, resumes execution of the thread of
- 3 instructions including accessing the resource associated with the semaphore.

- 1 14. The apparatus of claim 11 wherein when the thread of instructions is in the
- 2 inactive state, execution of the instructions ceases and the execution circuitry does not
- 3 poll the semaphore entity to determine a status of the semaphore request message.
- 1 15. An system comprising:
- 2 a memory controller;
- an execution circuit coupled with the memory controller to receive and execute a
- 4 thread of instructions, wherein the execution circuit transmits a semaphore request
- 5 message and places the thread in an inactive state in response to the thread of instructions
- 6 requiring a resource having an associated semaphore;
- 7 a semaphore entity coupled with the execution circuit to receive the semaphore
- 8 request message from the execution circuit and to selectively grant control of the
- 9 semaphore in response to the semaphore request message by transmitting a semaphore
- acknowledge message to the execution circuitry, wherein the execution circuitry, in
- 11 response to receiving the semaphore acknowledge message, removes the thread of
- instructions from the inactive state.
- 1 16. The system of claim 15 further comprising:
- at least one additional execution circuit to execute threads of instructions; and
- a thread dispatcher coupled with the execution circuit and at least one additional
- 4 execution circuit to dispatch threads for execution by selected execution circuits.

- 1 17. The system of claim 15, wherein the execution circuitry, in response to
- 2 receiving the semaphore acknowledge message, resumes execution of the thread of
- 3 instructions including accessing the resource associated with the semaphore.
- 1 18. The system of claim 15 wherein when the thread of instructions is in the
- 2 inactive state, execution of the instructions ceases and the execution circuitry does not
- 3 poll the semaphore entity to determine a status of the semaphore request message.